



# MILLS CREEK RESERVOIR

## Fisheries Management

### Sport Fish Restoration Document F-111-R-10

April 1, 2001 to March 31, 2002

#### Who is responsible for fisheries management at Mills Creek Reservoir?

The professionals responsible for fishing programs at Mills Creek Reservoir are fisheries biologists at the Virginia Department of Game and Inland Fisheries (DGIF) in Verona, VA (540-248-9360) and the U. S. Forest Service.

#### What are the responsibilities of the fisheries biologists?

Fish stocking, fish sampling, water quality monitoring, habitat improvement, angler access, angler surveys, program development, fishing regulation proposals, coordination with Forest Service and Augusta County staff, and public outreach.

#### Who owns Mills Creek Reservoir?

The U. S. Forest Service owns the 15.0-acre impoundment and Augusta County manages it as a flood control reservoir. Sailing, swimming, and gasoline motors are prohibited.

#### What kind of fish can I catch from Mills Creek Reservoir?

Brook trout. Although Mills Creek, above the lake, supports a small native brook trout fishery, these fish do not reproduce in the lake. Therefore, DGIF stocks 14,000 fingerling brook into the lake each spring. There are some golden shiners that occupy the shallows, but as of this writing, no warm water species inhabit the lake. This is important, because if voracious predators are voluntarily stocked, they would significantly impact the cold water (trout) fishery. Mills Creek Reservoir is managed as a "walk-in" fishery. Anglers are required to park off the Coal Road and hike 1.5 miles up an access road to the lake.

#### Who needs a license to fish?

A state resident, non-resident, or 5-day trip license for those 16 years and older is required at all times. A trout license is not needed to fish at Mills Creek Reservoir. A National Forest Permit is needed to fish the lake.

Fishing Regulations		
Species	Daily Limit	Minimum size
Brook Trout	6/day	7 inches

#### How do the biologists check the fish populations in the lake?

Biologists sample fish populations in a variety of ways. Electrofishing is used in lakes to assess warm water fish (bass and sunfish) populations. Since these type of fish do not populate Mills Creek Reservoir, electrofishing is not the tool of choice.

Gill nets can be employed to target sport fish that live in deep or open water, such as trout, catfish, striped bass, and walleye. We set 8 shoreline gill nets on October 5, 2001 and left them in place overnight. Gill nets are non-selective. In other words, they catch

any species of fish that swims into them. We sample with gill nets at Mills Creek Reservoir every three years.

#### What kind of things do biologists do with the fish after they net them?

Fish are "picked", identified, sorted, counted, measured, and weighed.

#### What do biologists do with the information?

First, density or relative abundance of target species is determined. By normalizing our count by "net night", we can compare the number of brook trout from sample to sample, from year to year, from lake to lake. Catch-per-unit-effort (CPUE) is simply the number of targeted fish caught in one net over one night. The idea is to achieve balance in a fish population. Slow growth can be found by determining a fish's age and looking at its length at that age. This can be done by counting annuli, or growth "rings", on hard structures such as scales or otoliths (ear stones). Biologists also divide fish into size groups and use simple ratios to evaluate the balance of medium, keeper, and trophy size fish in the population. These are referred to as population indices, and they can be used to look at an individual species over time. Are fish too thin for their length? "Plumpness" can be measured using an index that compares the weight of an individual fish to those of the same size across the U.S. This is called relative weight and a fish scoring 100 would be considered the right weight for its length. Fishing regulations, such as length limits, are usually derived from periodic sampling and from harvest data that is generated through angler surveys. Often, a minimum length limit, such as 7 inches for trout, is imposed on a lake. Such a regulation is designed to make anglers "throw back the little ones" to allow them to grow a bit before harvest. Another type of length regulation is a "slot size limit". A slot limit is meant to protect a group of fish (usually of larger size), and allows anglers to harvest younger and trophy fish. This regulation is used to "thin out" plentiful young fish while protecting substantial numbers of quality size fish. This is usually used with warm water fish, not trout.

#### What does the fish population look like in Mills Creek Reservoir?

Brook trout: In 2001, a total of 19 brook trout were caught, for a catch rate of 2 fish per net night. Is this good? Look at the blue line graph on the back page to see how our 2001 sample stands against previous years. The catch rate in 1998 was 9 fish per net night, so the CPUE dropped considerably between samples. This may be an artifact of sampling error, not overfishing or habitat alteration. 70% of the trout caught were between 7.5 and 11.5 inches long and 30% were over 11.5 inches. This is outstanding for a relatively unfertile brook trout lake. Were the trout "skinny" as a result of living in an unproductive lake? The average relative weight was 122. This simply means that the brookies were heavy proportionate to their length. The red bar graph shows the frequency distribution of brook trout length vs. catch. The peaks

on the graph help show how old the fish are at a given length. In this graph, we combined the 1998 and 2001 catch at Mills Creek Reservoir to give us a large number of brookies to examine. Growth, according to the graph, is outstanding. In fact, Mills Creek Reservoir harbors five year old brook trout up to 16 inches in length. This is highly desirable for a relatively infertile mountain reservoir.

### What other kinds of fisheries improvement work has taken place at Mills Creek Reservoir?

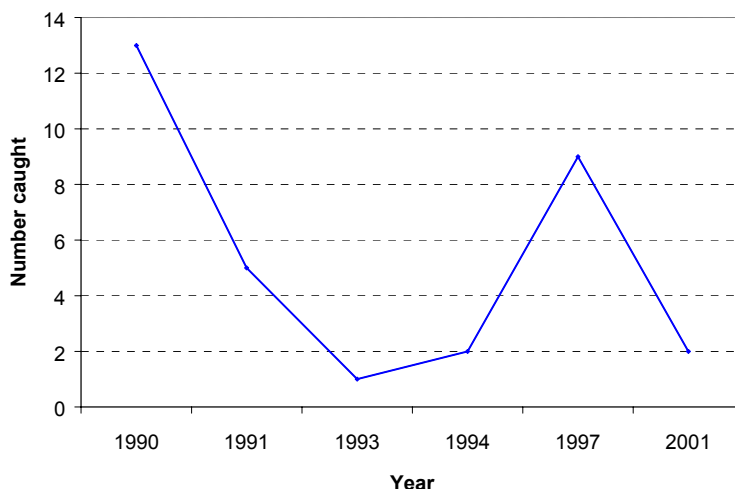
Mills Creek Reservoir lies within a watershed that is moderately acidified. Water quality testing took place in 1993-1994 (James Madison University) to determine whether Mills Creek Reservoir, and its sister lake in the Big Levels Management Unit – Coles Run Reservoir, would be good candidates for a liming project. Detailed water quality analysis was obtained seasonally, and at different depths in both lakes. Although it was determined that Mills Creek Reservoir is mildly acidified, the liming project was put on hold due to cost. Trout habitat in a lake is determined by the amount of cold, oxygenated water available during later summer. Mills Creek Reservoir meets this criteria, and, therefore continues to support good brook trout angling despite its low pH. Important food items are terrestrial insects, golden shiners, and water boatmen. The trout stocking strategy was changed in 1996, from releasing 100 yearling brook trout per acre each fall to stocking roughly 1,000 brook trout fingerlings per acre each spring. The change was made to reduce immediate post-stocking harvest for those fish who were longer than 7 inches.

### What does the future hold for fishing at Mills Creek Reservoir?

DGIF will continue to work with Augusta County and the Forest Service to provide a high quality put-and-grow brook trout fishery at Mills Creek Reservoir. Annual stocking of fingerling brook trout will take place each spring. Future creel surveys are planned pending appropriate funding. We hope you enjoy your fishing experience at Mills Creek Reservoir!

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Brook Trout CPUE



Mills Creek Reservoir Brook Trout 1998 & 2001 Combined

